



Study of 2-mercaptobenzoic acid and 2-pyridinethiol as inhibitors on the cresolase and catecholase reactions of mushroom tyrosinase

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ABSTRACT

Catecholase and cresolase activities of mushroom tyrosinase (MT) were studied in the presence of 2-mercaptobenzoic acid (thiosalicylasaure) and 2-pyridinethiol inhibitions. Caffeic acid and p-coumaric acid were used as natural substrate for the enzyme for the catecholase and cresolase reactions, respectively. The catecholase and cresolase activities of MT in the presence of 2-pyridinethiol as inhibitor achieved in the concentrations of (1.5, 3, 4.5 and 6 μM). In addition, the cresolase and catecholase activities of MT in the presence of 2-mercaptobenzoic acid used in presence of (2.5, 5, 10 and 15 μM). The inhibition constant (K_i) values of 2-pyridinethiol obtained 0.84 and 5.37 μM for catecholase and cresolase reactions, respectively, with noncompetitive pattern. But for the 2-mercaptobenzoic acid revealed a competitive mode of inhibition with the inhibition constants of 5.45 and 9.35 μM , for catecholase and cresolase reactions, respectively. Thus, the results showed that the carboxyl and sulfydryl functional group of these organosulfur compounds play a crucial role in the inhibition of MT. Their K_i values showed that they are among the good inhibitors of enzyme.

Key words: Mushroom tyrosinase; 2-mercaptobenzoic acid; 2-Pyridinethiol; Inhibition; Sulfur